

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHEL FAJOUR

Appeal No. 1999-1629
Application 08/510,491¹

HEARD: October 24, 2001

Before MARTIN, BARRETT, and LEVY, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed August 2, 1995, entitled "Franking Machine Incorporating an Inkjet Print Head," which claims the foreign filing priority benefit under 35 U.S.C. § 119 of French Application 94 09 804, filed August 8, 1994.

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This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1 and 3-10.

We affirm-in-part.

BACKGROUND

The disclosed invention relates to a franking machine having an inkjet print head. Inkjet print heads have a row of nozzles mounted perpendicular to the direction of movement of the mail items, which nozzles are individually controlled to print a postal mark. The postal marks have a dimension, imposed by the postal authorities, which is less than the length of the row of nozzles. Consequently, not all of the nozzles are excited to print the postal mark. The problem is that if any nozzle is not excited for some time, the ink inside it tends to dry, which clogs the nozzle, and the dried ink in the nozzle is likely to block any movement of the piezoelectric walls of the nozzle in question. "This phenomenon of immobilization of the piezoelectric walls of a nozzle propagates from nozzle to nozzle and eventually leads to general dysfunctioning of the print cartridge." (Specification, p. 3, lines 11-14).

Appellant discloses two embodiments to solve the problem. In a first embodiment, a controller operates a fixed set of consecutively disposed nozzles, the set being less than all the nozzles in the row, to print a postal mark on a mail item, and then operates the other nozzles when there is no mail item in front of the print head, such that the other nozzles are cyclically purged (claims 1, 3, 7, and 9). In a second embodiment, a controller alternatively operates different sets of consecutively disposed nozzles, each set having a number of nozzles less than the total number of nozzles in the row, to print the postal mark on a plurality of mail items, such that in time, all of the nozzles are operated (claims 4-6, 8, and 10).

Claim 1 is reproduced below.

1. A franking machine comprising:

an inkjet print head including a row of nozzles;

a controller for selectively operating said print head to print a postal mark on a mail item passing under said print head with said print head in a print position, only a set of said nozzles which are disposed consecutively in the row being operated by the controller to print the postal mark, said set being less than a total number of said nozzles in the row,

wherein said controller further operates other of said nozzles of said row of nozzles, different than

said set of nozzles, when said print head is at said print position and there is no mail item in front of the print head in order to eject ink from said other nozzles to prevent said other nozzles from becoming clogged over time; and

a reservoir disposed below said print head at said print position into which said ink is ejected by said other of said nozzles.

THE PRIOR ART

The Examiner relies on the following references:

1984	Dagna et al. (Dagna)	4,485,386	November 27,
1991	Fisher et al. (Fisher)	5,051,761	September 24,
1993	Herbert	5,189,442	February 23,
1988	Nakagawa ² (Japanese Kokai)	JP 63-252748	October 19,

Herbert discloses a franking machine with an ink jet printer. Debris from mail items which is liable to be deposited on the nozzles of the print head is removed periodically by a cleaning device (roller 26 having a wiper pad 27) operating when there is a gap between successive mail items (abstract; col. 3, line 52 to col. 4, line 26; Fig. 1).

² A translation has been prepared by the U.S. Patent and Trademark Office and accompanies this opinion. We rely only on the English-language abstract in making our decision.

Herbert discloses utilizing melted solid ink, but states that the cleaning means may be used with inkjet print heads utilizing liquid inks (col. 6, lines 13-20). The operation of the printing nozzles is checked by printing a bar code by operating all of the nozzles and then parts of the bar code printed by different ones of the nozzles are optically sensed and checked that they are properly printed (col. 4, lines 27-67). Data signals may be sent to the print head in either a serial fashion (Fig. 3; col. 5, lines 11-28) or a parallel fashion (Fig. 4; col. 5, lines 51-63).

Nakagawa is directed to an anti-clogging device in an inkjet printer. When nozzles are exposed to the atmosphere for a set time without discharging ink or when the number of discharge cycles is extremely low, moisture in the ink inside the nozzles can evaporate causing sticking, clogging, and discharge failure (translation, p. 4). The prior art drives all the nozzles at periodic intervals to discard old ink to provide anti-clogging control; however, this reduces printer throughput and increases costs (translation, p. 4). Nakagawa provides a counter that counts the number of discharges per nozzle individually, compares the number of discharges to a

set value, and then discharges an appropriate amount of ink from only the nozzles having a count equal to or less than the set value at a location outside the recording region (translation, pp. 6-7; abstract).

Fisher discloses a maintenance station 18 which permits multiple maintenance operations to be performed on a print head through an opening in the paper handling assembly without moving the print head to a special position (col. 5, lines 27-31 and 57-61). Fisher recognizes that one problem with inkjet printing systems is clogging of the print head nozzle caused by ink drying therein due to non-use for a period of time (col. 1, lines 62-65). One of the maintenance operations is a capping-spitting station 22 (col. 4, lines 63-67), where the "spitting" presumably refers to ejecting ink. Thus, station 22 would seem to serve both a capping and reservoir function like the head capping mechanism 30 in Nakagawa which caps the nozzles and holds the ejected ink from the nozzles.

THE REJECTIONS

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Claims 1, 3-5, and 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Herbert, Nakagawa, and Fisher.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Herbert, Nakagawa, Fisher, and Dagna.

We refer to the final rejection (Paper No. 11) and the examiner's answer (Paper No. 18) (pages referred to as "EA__") for a statement of the Examiner's position, and to the brief (Paper No. 17) (pages referred to as "Br__") and the reply brief (Paper No. 20) (pages referred to as "RBr__") for a statement of Appellant's arguments thereagainst.

OPINION

Grouping of claims

Appellant argues two groupings of claims (Br4):
(1) claims 1, 3, 7, and 9, which stand or fall together with claim 1; and (2) claims 4-6, 8, and 10, which stand or fall together with claim 4.

Claims 1, 3, 7, and 9

Claim 1 defines a controller that operates a set of consecutively disposed nozzles, the set being less than all the nozzles in the row, to print a postal mark on a mail item,

and operates other nozzles different from the set of nozzles when there is no mail item in front of the print head.

It appears that Herbert is the main reference primarily because it teaches an inkjet printer used in a franking machine. Nakagawa and Fisher show ink jet printers, but do not disclose printing a postal mark on a mail item. Herbert teaches cleaning external debris from the nozzles, but does not teach cleaning the print head nozzles to prevent clogging by ejecting ink as in Nakagawa and Fisher.

The Examiner finds that "[o]bviously, the number of nozzles in the group would be less than the total number of nozzles in the row in Herbert" (EA3).

We find no express support in Herbert for this finding. However, Appellant does not dispute this finding in the briefs and, when asked at oral hearing, counsel for Appellant agreed that such limitation is implicit in Herbert. The admitted prior art, although not relied on, confirms that it was known to use less than the total number of nozzles in the row of nozzles to print a postal mark (specification, pp. 1-3). Therefore, we find that it was known in prior art devices, such as Herbert, for the inkjet print head to have a row of

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nozzles where one set of consecutive nozzles, the set being less than a total number of nozzles in the row, prints a postal mark on a mail item and an other set of nozzles, different from the set, is not used.

The Examiner finds that Herbert does not teach the limitations of the last two paragraphs of claim 1 ("wherein said controller . . ." and "a reservoir . . ."). The Examiner relies on Nakagawa and Fisher. The Examiner concludes that it would have been obvious to include the counter of Nakagawa in Herbert to count the number of discharges of different nozzles for the purpose of determining which nozzle(s) need discharging to prevent clogging (EA4). The Examiner further concludes that it would have been obvious to modify Herbert as modified by Nakagawa to provide a reservoir and an opening in the paper handling assembly so that the print head would not have to be moved out of the printing position to save space (EA5).

Appellant notes that since the counting is done on an individual basis, the discharge in Nakagawa may occur from any of the nozzles, even the ones that are operated during a normal print cycle (Br5). Appellant argues that the present

invention does not rely on a counting feature to initiate operation of the other nozzles; the present machine includes a counter that merely tracks usage of each nozzle for replacement purposes (Br5). Appellant argues that claim 1 defines the "other nozzles" as "different than said set of said nozzles [used to print a postal mark]," and the nozzles operated between successive mail items are different than the nozzles operated to print the postal mark, which is conceptually and practically different from the counter feature of Nakagawa (Br6). It is further argued that the operation of the "other nozzles" depends on the location of mail items relative to the print head, whereas Nakagawa's counting feature operates after each print cycle on all nozzles (RBr1-2).

It is true that Nakagawa teaches discharging from any of the nozzles. Thus, Nakagawa as combined with Herbert would have suggested ejecting ink from all non-used or little-used nozzles at the same time, including the nozzles operated to print the postal mark. However, the limitation that "said controller further operates other of said nozzles of said row of nozzles, different than said set of said nozzles, when

. . ." (claim 1) does not preclude operating "said set of said nozzles" as well the "other of said nozzles"; i.e., it does not require operating only the other nozzles as argued.

Claim 1 does not preclude the use of a counter as a condition for the controller to cause non-used nozzles to eject ink in addition to the condition that there is no mail item in front of the print head. While Appellant's invention does not require a counter if the nozzles are purged after every franking cycle (specification, p. 7, lines 29-32), it would require a counter if the nozzles were purged every ten franking cycles (specification, p. 8, line 7). Thus, a counter is not inconsistent with the disclosed invention. It is also noted that the limitation of "a reservoir disposed below the print head at said print position into which said ink is ejected by said other of said nozzles" (claim 1) does not preclude the reservoir from capturing ink from all nozzles, although it is disclosed that the reservoir can be small and compact because it only has to collect ink purged from the nozzles not used for printing (specification, p. 7, lines 16-20).

Based on our claim interpretation, we conclude that it would have been obvious to one of ordinary skill in the inkjet printing art to operate the other nozzles in Herbert, the ones not used for printing, "in order to eject ink from said other nozzles to prevent said other nozzles from becoming clogged over time" (claim 1) in view of Nakagawa's teaching of operating non-used or little-used nozzles periodically to prevent the nozzles from becoming clogged. Appellant does not argue the limitations about ejecting ink "when said print head is at said print position and there is no mail item in front of said print head" (claim 1) and does not address the teachings of Fisher which are applied to show that ink can be ejected with the print head at the print position and when no item is in front of the print head. Thus, the rejection as to these limitations is not contested. See 37 CFR § 1.192(c)(8)(iv) (1998) (the brief shall specify the errors in the rejection). Nevertheless, it is noted that Fisher teaches ejecting ink into a reservoir (the "spitting" station) to prevent clogging without moving the print head, and both Herbert and Fisher teach cleaning the nozzles while there are no items in front of the print head (which would also seem to

be a matter of common sense). The references provide sufficient evidence to establish a prima facie case of obviousness. The rejection of claims 1, 3-5, and 7-10 is sustained.

Claims 4-6, 8, and 10

Claim 4 defines a controller that alternatively operates different sets of consecutively disposed nozzles, each set having a number of nozzles less than the total number of nozzles in the row, to print the postal mark on a plurality of mail items, such that in time, all of the nozzles are operated. That is, the set of nozzles that prints the postal mark is not always the same.

The Examiner states (EA5-6):

The features recited in claim 4 the "controller alternatively operates different ones of said sets of said nozzles so as in time to operate all of said nozzles of said row of nozzles" are at least suggested by Herbert.

As stated at column 5, lines 3-10, Herbert suggests that print head can be controlled by print signals which are sent either serially or in parallel. Because the controls of the group of nozzles are associated with the print signals, respectively, the group of nozzles is thus also responded either serially or in parallel. Eventually, by firing nozzles in sequentially [sic] order all nozzles in the row will be fired over time. As for controlling the actuating of nozzles in a particular

manner (sequential, random, cyclic, alternating), it is to be noted that a statement of intended use "wherein the controller alternatively ... nozzles" does not distinguish the claimed structural apparatus over the prior art's.

Appellant argues that the serial/parallel teaching bears exclusively on the manner of signal transmission, and is irrelevant with respect to a particular group of nozzles used to print an individual franking impression (RBr3). It is argued that claim 4 requires more than firing of all the nozzles in the row over time, but requires a sets of nozzles which are operated to print the postal mark, each set having less than the total number of nozzles in the row and being offset from each other so as to include some of the nozzles of the other sets (RBr3-4). Lastly, Appellant argues that the "wherein" language is a functional limitation, not a statement of intended use which the Examiner is free to dismiss (RBr4).

We agree with Appellant. As discussed in connection with claim 1, it was known to have an inkjet print head in devices such as Herbert with a row of nozzles where one set of consecutive nozzles, the set being less than the total number of nozzles in the row, prints a postal mark on a mail item and an other set of nozzles, different from the set, is not used.

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However, Herbert does not teach or suggest operating sets of nozzles to print the postal mark, each set having less than the total number of nozzles and being offset from each other so as to include some of the nozzles of the other sets (i.e., the sets overlap one another). Herbert does not teach or suggest using different sets of nozzles to print the postal mark. The serial/parallel nature of the signal transmission to the print head in Herbert has nothing to do with the printing. The serial registers 51 in Herbert are loaded in serial and read out in parallel to operate, via buffers 52, the piezoelectric devices 50 of the print nozzles 11 (col. 5, lines 20-28). To the extent the Examiner assumes the nozzles are driven sequentially, one nozzle at a time, so as to eventually fire all nozzles, this is error: the nozzles are all driven at one time. In addition, a "set" requires a "plurality of nozzles disposed consecutively in the row"; thus, operating nozzles individually in sequence does not meet the claim language. We agree with Appellant that the "wherein" limitation is a functional limitation, not a mere statement of intended use, and is not taught or suggested by Herbert or the other references. For these reasons, we

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conclude that the Examiner has failed to establish a prima facie case of obviousness. The rejection of claims 4-6, 8, and 10 is reversed.

Gatten not considered

The Examiner cites Gatten, U.S. Patent 4,989,016, for the first time during prosecution in the examiner's answer (EA6).

Appellant argues that the Examiner's reliance on Gatten, which is not even of record in the case, is inappropriate (RBr4).

We agree with Appellant. Gatten is not properly before us and will not be considered. The rejection must contain a mention of all references applied in the rejection. See In re Hoch, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970); Ex parte Movva, 31 USPQ2d 1027, 1028 n.1 (Bd. Pat. App. & Int. 1993). Accord Ex parte Hiyamizu, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Int. 1988); In re Raske, 28 USPQ2d 1304, 1304-05 (Bd. Pat. App. & Int. 1993); MPEP § 706.02(j) (7th ed., rev. 1, Feb. 2000). If Gatten was considered, it would improperly create a new ground of rejection, which was not permitted at the time the examiner's answer was entered. See 37 CFR § 1.193(a)(2)(1998).

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CONCLUSION

The rejection of claims 1, 3-5, and 7-10 is sustained.

The rejection of claims 4-6, 8, and 10 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOHN C. MARTIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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